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☐ 1: J Agric Food Chem 1999 Jan;47(1):61-6[Related Articles, Books, LinkOut](#)

# **Productivity and some properties of immunoglobulin specific against *Streptococcus mutans* serotype c in chicken egg yolk (IgY).**

**Chang HM, Ou-Yang RF, Chen YT, Chen CC.**

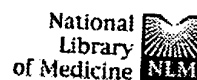
Graduate Institute of Food Science and Technology, National Taiwan University, Taipei 106, Taiwan.

Hens were immunized on thighs by using whole cells of *Streptococcus mutans* MT8148 serotype c strain as antigen through intramuscular (im) and subcutaneous (sc) routes to investigate the difference of immunization reactions and the changes in yolk antibody activities against antigen after initial immunization. Several properties of crude IgY were examined to evaluate the stability during food processing. Results showed that the specificity of IgY of im treated hens was nearly 10 times as high as those of sc treated antibody. IgY from the hens immunized with the serotype c strain showed significant cross-reactions against serotypes e and f, while minor reactions against serotypes a, b, d, and g were observed. In thermal stability tests, IgY activity in both yolk and crude IgY decreased with the increasing temperature, from 70 to 80 degrees C, but the thermal denaturation rates between those two samples were not significantly different. The addition of high levels sucrose, maltose, glycerol, or 2% glycine displayed effective protection against thermal denaturation of IgY. Lyophilized yolk-5% gum arabic powder showed better stability against proteases.

PMID: 10563850 [PubMed - indexed for MEDLINE]

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☐ 1: Caries Res 1997;31(4):268-74

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# **Passive immunization against dental plaque formation in humans: effect of a mouth rinse containing egg yolk antibodies (IgY) specific to *Streptococcus mutans*.**

Hatta H, Tsuda K, Ozeki M, Kim M, Yamamoto T, Otake S, Hirasawa M, Katz J, Childers NK, Michalek SM.

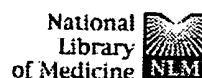
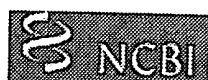
Taiyo Kagaku Co., Ltd., Central Research Laboratories, Mie, Japan.

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Passive immunization involving the delivery of antibodies specific to pathogens of infectious diseases to the host has been an attractive approach to establish protective immunity against a variety of microbial pathogens, including *Streptococcus mutans*, which is the principal etiologic agent of dental caries in humans. The overall purpose of the present study was to determine the effectiveness of a mouth rinse containing antibodies to *S. mutans* in preventing the establishment of this bacterium in dental plaque of humans. The antibodies were derived from egg yolks obtained from hens immunized with whole cells of *S. mutans* grown in sucrose-containing medium. The immunoglobulin derived from the yolks (IgY) of immunized hens was characterized in vitro and in vivo in human volunteers. Cross-reactivity tests showed that immune IgY reacted with every serotype, except serotype b, which had lost its GTase activity, when the bacteria were cultured in sucrose-containing medium. Immune IgY inhibited *S. mutans* adherence to saliva-coated hydroxyapatite discs by 59.2%, while control IgY caused an inhibition of only 8.2%. In the short-term (4-hour) test using a mouth rinse containing 10% sucrose, immune IgY decreased the ratio of the percentage of *S. mutans* per total streptococci in saliva. In the long-term (7-day) test using a mouth rinse without sucrose, the ratio in saliva was not significantly reduced in the volunteers using the immune IgY due to the large standard deviation. However, comparing the ratios of the percentage of *S. mutans* per total streptococci in plaque of individual subjects, there was a tendency for a reduction of the ratios in the volunteers receiving the mouth rinse containing immune IgY. These results support the effectiveness of IgY with specificity to *S. mutans* grown in the presence of sucrose as an efficient method to control the colonization of mutans streptococci in the oral cavity of humans.

Publication Types:

- Clinical trial



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1: J Dent Res 1991 Mar;70(3):162-6

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NEW

## Protection of rats against dental caries by passive immunization with hen-egg-yolk antibody (IgY).

PubMed  
Services

Otake S, Nishihara Y, Makimura M, Hatta H, Kim M, Yamamoto T, Hirasawa M.

Department of Clinical Pathology, Nihon University School of Dentistry, Chiba, Japan.

Related  
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Hen-egg-yolk antibody (IgY) was prepared against *Streptococcus mutans* MT8148 serotype c that was cultivated in medium containing sucrose, and it was used in passive caries-immunity studies. Specific pathogen-free rats infected with *S. mutans* MT8148 (c) and fed with a cariogenic diet containing more than 2% immune yolk powder developed significantly lower caries scores than did the ones infected with the same strain and fed with a diet containing only control yolk powder obtained from non-immunized hens. Similar results were obtained in an experiment with rats infected with *S. mutans* JC-2 (c) strain. Rats provided a diet supplemented with 0.5% immune water-soluble protein fraction containing *S. mutans*-specific IgY and challenged with *S. mutans* MT8148 exhibited significantly fewer caries lesions, compared with control rats on the normal diet.

PMID: 1825668 [PubMed - indexed for MEDLINE]

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File: USPT

May 18, 1999

US-PAT-NO: 5904922

DOCUMENT-IDENTIFIER: US 5904922 A

TITLE: Treatment with polyvalent antivenom containing  
immunoglobulin which is greater than 50% venom-reactive

DATE-ISSUED: May 18, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Carroll; Sean B.	Cottage Grove	WI	N/A	N/A

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Ophidian Pharmaceuticals, Inc.	Madison	WI	N/A	N/A	02	

APPL-NO: 8/ 442000

DATE FILED: May 16, 1995

## PARENT-CASE:

This application is a division of application Ser. No. 08/275,304, filed Jul. 14, 1994, now U.S. Pat. No. 5,443,976, which is a continuation of application Ser. No. 07/983,668, filed Dec. 1, 1992, abandoned, which is a division of application Ser. No. 07/429,791, filed Oct. 31, 1989, U.S. Pat. No. 5,196,193.

INT-CL: [6] A61K 39/395, A61K 38/55, C07K 16/18, C07K 17/02

US-CL-ISSUED: 424/130.1; 424/158.1, 424/542; 435/174, 435/178, 435/180, 436/518, 436/529, 436/824, 514/2, 514/21, 530/387.1, 530/389.1, 530/413, 530/810, 530/813, 530/856, 530/858

US-CL-CURRENT: 424/130.1; 424/158.1, 424/542, 435/174, 435/178, 435/180, 436/518, 436/529, 436/824, 514/2, 514/21, 530/387.1, 530/389.1, 530/413, 530/810, 530/813, 530/856, 530/858

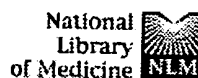
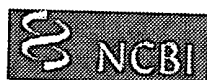
FIELD-OF-SEARCH: 530/387.1, 530/856, 530/858, 530/389.1, 530/413, 530/810, 530/813, 424/130.1, 424/542, 424/158.1, 514/2, 514/21, 435/174, 435/178, 435/180, 436/518, 436/529, 436/824

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## Chicken antibodies: a clinical chemistry perspective.

PubMed  
Services**Carlander D, Stalberg J, Larsson A.**

Department of Medical Sciences, Clinical Chemistry, University Hospital, Uppsala, Sweden.

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The chicken immune system has been studied for many years and these studies have contributed substantially to our understanding of the fundamental concepts of immunology and the development of different immunoglobulin classes. It is thus surprising that only a small fraction of the antibodies presently used in laboratories are of avian origin. A laying hen produces more yolk antibodies than a rabbit can produce during the same time period, and the animal care costs are lower for the chicken compared to the rabbit. Chicken antibodies offer many advantages to the traditional mammalian antibodies when used for the detection of mammalian antigen. Due to the evolutionary difference chicken IgY will react with more epitopes on a mammalian antigen, which will give an amplification of the signal. Chicken antibodies can also be used to avoid interference in immunological assays caused by the human complement system, rheumatoid factors, human anti-mouse IgG antibodies (HAMA) or human and bacterial Fc-receptors. The antibodies can be purified in large amounts from egg yolk, making laying hens highly efficient producers of polyclonal antibodies.

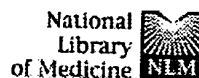
### Publication Types:

- Review
- Review, tutorial

PMID: 10680951 [PubMed - indexed for MEDLINE]

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☐ 1: J Immunol Methods 1993 Jun 18;162(2):155-64[Related Articles, Books](#)PubMed  
Services**Production and purification of Fab' fragments from chicken egg yolk immunoglobulin Y (IgY).****Akita EM, Nakai S.**

Department of Food Science, University of British Columbia, Vancouver, Canada.

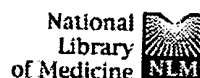
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Methods were described for the production of Fab and Fab' fragments from chicken egg yolk IgY also referred to as IgG by papain and pepsin digestion respectively. Pepsin digestion was found to be suitable for the large scale preparation and purification of Fab'. Optimum yield of Fab' was obtained after peptic digestion of IgY at pH 4.2 for 9 h at low NaCl concentration. This condition led to the complete digestion of pFc' fragment leaving only the Fab' fragment. By combination of ultrafiltration and anion exchange, and conditions which allowed binding of the small amount of contaminants in the digest to the anion exchange column, pure Fab' fragments were easily obtained in the eluent. The advantage of this approach is that a small column could be used to purify large amount of protein, therefore, improving the efficiency of purification. The Fab and Fab' fragments appeared to be similar on the basis of their molecular weights as determined by SDS-PAGE, reaction of identity in immunodiffusion assay and similar antigen binding activities as shown by ELISA.

PMID: 8315286 [PubMed - indexed for MEDLINE]

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## Isolation and characterization of human B cell alloantigens.

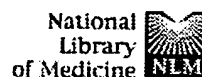
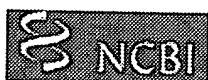
PubMed  
Services**Billing RJ, Safani M, Peterson P.**Related  
Resources

Human B lymphocyte alloantigens were solubilized from malignant spleen cell membranes from lymphoma patients by detergent treatment or papain digestion. Antigenic activity was detected by inhibition of cytotoxicity of rabbit and human anti-B cell antisera. Extracts from one patient (AC) specifically inhibited only B alloantisera of B groups 1 and 3; sera from B groups 4 and 5 were not inhibited. Inhibitory titers were greater than 1:400 against positive sera and less than 1:2 against negative sera. The papain extracts were purified by QAE-A50 Sephadex and Concanavalin A Sepharose 4B chromatography, and preparative sodium dodecyl sulfate polyacrylamide gel electrophoresis (PAGE) under nondenaturing conditions. By testing gel slices for antigenic activity the m.w. of the papain-extracted B antigen was 58,000 whereas the detergent-extracted antigen was 65,000. Antigenic activity detected by rabbit and human antisera copurify together, suggesting that these sera were reacting with the same molecules. Immunoprecipitation of sodium deoxycholate-solubilized extracts of a cultured human B lymphoid cell line 8392 with the rabbit anti-B cell antisera revealed two B cell polypeptides of apparent m.w. 27,000 and 35,000 that were not found on the paired T line 8402. It is suggested that these polypeptides might be subunits of the 65,000 dalton native B lymphocyte alloantigen. The polypeptide subunits do not appear to be linked covalently by disulfide bonds.

PMID: 826591 [PubMed - indexed for MEDLINE]

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## Streptococcus mutans in plaque and saliva and the development of caries.

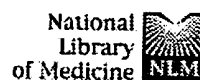
PubMed  
Services**Kohler B, Pettersson BM, Bratthall D.**Related  
Resources

Plaque samples from 10 different tooth surfaces of 10 schoolchildren with varied caries experience (DFS 10-33) were collected five times during 2.5 years. The samples were examined with an immunofluorescent technique for identification and enumeration of *Streptococcus mutans* serotypes c/e/f and d/g. At each sampling occasion the children were scored for caries. A stimulated saliva sample was also collected and the number of *S. mutans* per ml saliva was determined. The saliva level of *S. mutans* was shown to reflect the prevalence and proportion of this microorganism on the selected surfaces. Five surfaces carried *S. mutans* at each sampling. Four of these surfaces showed progressive caries. *S. mutans* infection was also found to precede the development of incipient caries on four surfaces. Eighty percent of the surfaces that stayed sound were only transiently carriers of *S. mutans* in mainly very low numbers. Serotype c/e/f dominated in prevalence and proportion on the surfaces with a history of caries during the study.

PMID: 6940227 [PubMed - indexed for MEDLINE]

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☐ 1: Nichidai Koko Kagaku 1990 Jun;16(2):196-211

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## [Initial-plaque forming ability of glucosyltransferases from *Streptococcus mutans* serotype C strain].

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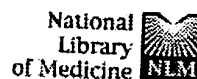
[Article in Japanese]

**Hiroi T.**

Department of Operative Dentistry, Nihon University School of Dentistry at Matsudo.

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In order to clarify functional roles of extracellular glucosyltransferases (GTases) from *S. mutans* serotype c in initial stage of plaque formation, GTase-I and GTase-S were purified from culture fluids of strain PS 14. And an ability of these GTases to enhance cellular attachment of oral streptococci was investigated using <sup>3</sup>H labeled resting cells of *S. sanguis* Challis and *S. milleri* Is 57. The results were as follows: 1) From culture fluids of strain PS 14 grown in a M 4 medium supplemented with 1% ammonium sulfate, GTase-I was purified by ammonium sulfate fractionation, CM-cellulose column chromatography and Toyopearl HW-55 gelfiltration. Also, GTase-S was purified by the method of Baba et al from the culture fluids of strain PS 14 grown in a dialyzed BHI medium. Purified GTase-I and GTase-S were almost homogeneous, and had a molecular size of 160 KDa and 145 KDa respectively (by SDS-PAGE). 2) Sucrose-dependent attachment of *S. sanguis* cells to experimental pellicles was markedly enhanced by the addition of crude GTase in saliva. This fact was conformed by a scanning electron microscopic observation of the attachment cells. Such enhanced attachment necessitated a long-term incubation (greater than 10 h) of the cells in the presence of sucrose, suggesting that it is correlated to de novo glucan synthesis. 3) Purified GTase-I also had an ability to enhance the cellular attachment of *S. sanguis* cells as well as crude GTase, while purified GTase-S didn't have. Neither crude enzyme, GTase-I nor GTase-S have an ability to enhance significantly the cellular attachment of *S. milleri* cells. However, *S. milleri* pretreated with the preparations containing GTase-S gained the ability to attach to experimental pellicles prepared from saliva supplemented with GTase-I. These results suggest that the cellular attachment system mediated by enzymatic action (s) of GTase (s) from serotype c *S. mutans* be present and function in the first stage of plaque formation.



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### First characterization in Italy of clinical isolates of mutans streptococci by using specific monoclonal antibodies.

Batoni G, Marchetti F, Ota F, Ghelardi E, Barnini S, Inoue H, Uchiyama C, Hirota K, Minato Y, Guica MR, et al.

Dipartimento di Biomedicina Sperimentale, Universita di Pisa, Italy.

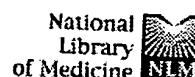
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The aim of this investigation was to gain further insight into the prevalence of different serotypes of mutans streptococci in the Italian population by using specific monoclonal antibodies in an enzyme immunoassay. Isolates from dental plaque samples, collected from an adult population living in Pisa (Italy), were identified as mutans streptococci on the basis of their morphological and biochemical properties, and were then serotyped. The results show that 77.5% of the strains isolated belonged to serotype c or f (i.e., *S. mutans*), 15.9% were serotype e (i.e., *S. mutans*) and only two strains (1.4%) belonged to serotype g (i.e., *S. sobrinus*). These data are partially in agreement with other studies in Europe and in the U.S.A. The distribution pattern of the various serotypes turned out to be substantially similar among the different groups of patients, subdivided on the basis of their caries status, indicating that none of the serotypes was particularly associated with dental caries.

PMID: 8307132 [PubMed - indexed for MEDLINE]

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# Isolation frequency and serotype distribution of mutans streptococci and Actinobacillus actinomycetemcomitans, and clinical periodontal status in Finnish and Vietnamese children.

Holttä P, Alaluusua S, Saarela M, Asikainen S.

Department of Pedodontics and Orthodontics, University of Helsinki, Finland.

Related  
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The isolation frequency and serotype distribution of mutans streptococci and A. actinomycetemcomitans (A.a.) were investigated in a group of Finnish (n = 16) and Vietnamese (n = 16) children, matched by sex, age, and caries status. In the Vietnamese children, the isolation frequencies were higher than in the Finnish children: 100%/62% for mutans streptococci and 78%/13% for A.a. Isolates (n = 3-8) from plaque and saliva were serotyped by immunodiffusion technique using serotype-specific antisera against serotypes c, e, f, d, and g for mutans streptococci and a, b, c, d, and e for A.a. The distribution of mutans streptococci serotypes in Finnish/Vietnamese children was: c 100%/50%; e 10%/31%; d 0%/56%; g 20%/38%. The frequency of plural serotypes was 30%/75%, respectively. In the Vietnamese group the serotype distribution of A.a. was: a 36%, b 27%, and c 63%; 45% of children carried two serotypes. One Finnish child harbored serotype a and one serotype b. The mean percentage of bleeding gingival sites was 7.4 in the Finnish and 15.1 in the Vietnamese group. Calculus and clinically deepened gingival pockets were more frequent findings in the Vietnamese children. The results indicate considerable differences in bacteriologic status and in clinical periodontal status between these Finnish and Vietnamese children.

PMID: 8016556 [PubMed - indexed for MEDLINE]

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